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10/590,910	05/03/2007	Tatsuya Hayashi	2006-1422A	5620

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EXAMINER	
WAITS, ALAN B	

ART UNIT	PAPER NUMBER
3656	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,910	HAYASHI ET AL.	
	Examiner	Art Unit	
	ALAN B. WAITS	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/28/2006,3/25/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "radially inner side of the flange portion is made of a thick resin and a radially outer side there of is made of a thinner resin than the thick resin" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "apart". It is unclear what this limitation means. Perhaps it should be --a part--.

Claim 3 recites the limitation "coming closer to an opposed face in a radially outward direction". It is unclear what the inclined plane is coming closer than.

Claim 4 recites the limitation "a thick resin and a thinner resin". It is unclear in what way this resin is thicker or thinner.

Claim 5 recites the limitation "a resin". It is unclear if this is the same resin as previously recited in claim 3 or a new resin.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Takanobu et al. JP 02-278007.

Takanobu discloses a similar device comprising:

Re clm 1:

- A fixed-side member (2, fig 4)
- A rotational-side member (1, fig 4)
- A thrust bearing surface (bottom of 1, fig 4) formed on any one of the fixed-side member and the rotational-side member
- The thrust bearing surface including a dynamic pressure generating groove area (fig 2) having a plurality of dynamic pressure generating grooves (6, fig 2) being arranged thereon
- A thrust receiving surface (top of 2, fig 4) provided on the other one of the fixed-side member and the rotational-side member so as to be opposed to the thrust bearing surface in an axial direction
- A thrust bearing gap (3, fig 4) formed between the thrust bearing surface and the thrust receiving
- The thrust bearing gap being for generating a pressure by a dynamic pressure effect of a fluid during rotation of the rotational-side member so as to support a rotary member in an axial direction in a non-contact manner by the pressure (fig 4)
- A reduced portion (d2, fig 4) having an axial width decreasing in a radially outward direction is provided in the thrust bearing gap
- The plurality of dynamic pressure generating grooves are provided so as to face the reduced portion (fig 4)

- Pumping power of the dynamic pressure generating grooves is maximized in a radially outermost portion of the reduced portion (fig 4)

Re clm 2:

- At least one of the thrust bearing surface and the thrust receiving surface of the reduced portion is formed as an inclined plane (the surface of 1 is inclined relative to the slope of the outermost portion of 2, fig 4)

6. Claims 1, 2, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ouchi et al. JP 10-269691.

Ouchi discloses a similar device comprising:

Re clm 1:

- A fixed-side member (101, fig 1)
- A rotational-side member (115, fig 1)
- A thrust bearing surface (115a, fig 1) formed on any one of the fixed-side member and the rotational-side member
- The thrust bearing surface including a dynamic pressure generating groove area (fig 8a) having a plurality of dynamic pressure generating grooves (131d, fig 8a) being arranged thereon
- A thrust receiving surface (132, fig 8b) provided on the other one of the fixed-side member and the rotational-side member so as to be opposed to the thrust bearing surface in an axial direction
- A thrust bearing gap (between 115a and 116, fig 2) formed between the thrust bearing surface and the thrust receiving

- The thrust bearing gap being for generating a pressure by a dynamic pressure effect of a fluid during rotation of the rotational-side member so as to support a rotary member in an axial direction in a non-contact manner by the pressure (fig 1)
- A reduced portion (outer edge of 115a, fig 2) having an axial width decreasing in a radially outward direction is provided in the thrust bearing gap
- The plurality of dynamic pressure generating grooves are provided so as to face the reduced portion (fig 1)
- Pumping power of the dynamic pressure generating grooves is maximized in a radially outermost portion of the reduced portion (fig 1)

Re clm 2:

- At least one of the thrust bearing surface and the thrust receiving surface of the reduced portion is formed as an inclined plane (131a, fig 8a)

Re clm 8 & 9:

- A rotor magnet (105, fig 1) attached to the rotational-side member
- A stator coil (102, fig 1) attached to the fixed-side member

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi et al JP 10-269691 as applied to claim 2 above.

Ouchi discloses all the claimed subject matter as described above.

Re clm 6, Ouchi does not disclose:

- A ratio is set such that h/r ≤ 0.01 where a length of the inclined plane l a radial direction is r and a height of the inclined plane is h

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide:

- A ratio is set such that h/r ≤ 0.01 where a length of the inclined plane l a radial direction is r and a height of the inclined plane is h

since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re clm 13, Ouchi further discloses:

- A rotor magnet (105, fig 1) attached to the rotational-side member
- A stator coil (102, fig 1) attached to the fixed-side member

9. Claims 3, 4, 7, 10, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi et al JP 10-269691 in view of Imae JP 2003184868.

Ouchi discloses a similar device comprising:

Re clm 3:

- A shaft member (106, fig 1) having a shaft portion (106, fig 1) and a flange portion (115, fig 1)

- A thrust bearing portion (115a, fig 2) for generating a pressure by a dynamic pressure effect of a fluid in a thrust bearing gap (between 115a and 116, fig 2) between an end face (115a, fig 2) of the flange portion and a face (116a, fig 2) being opposed thereto so as to support the shaft member in an axial direction in a non-contact manner by the pressure
- At least a part of the end face facing the thrust bearing gap is formed as an inclined plane (151a, fig 8a) coming closer to an opposed face in a radially outward direction (fig 1)

Ouchi does not disclose:

- The end face of the flange portion facing the thrust bearing gap is formed of resin

Imae teaches:

- The end face of the flange portion facing the thrust bearing gap is formed of resin (abs)

for the purpose of reducing the cost of the flange (abs).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Ouchi and provide:

- The end face of the flange portion facing the thrust bearing gap is formed of resin

for the purpose of reducing the cost of the flange.

Re clm 4, Ouchi in view of Imae, as best understood, discloses:

- A radially inner side of the end face of the flange portion, which faces the thrust bearing gap, is made of a thick resin (fig 1; Ouchi) and a radially outer side thereof is made of a thinner resin than the thick resin (fig 1, Ouchi)

Re clm 7, Ouchi in view of Imae does not disclose:

- A ratio is set such that h/r ≤ 0.01 where a length of the inclined plane l a radial direction is r and a height of the inclined plane is h

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide:

- A ratio is set such that h/r ≤ 0.01 where a length of the inclined plane l a radial direction is r and a height of the inclined plane is h

since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re clms 10, 11 and 14, Ouchi further discloses:

- A rotor magnet (105, fig 1) attached to the rotational-side member
- A stator coil (102, fig 1) attached to the fixed-side member

10. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi et al JP 10-269691 in view of Imae JP 2003184868 as applied to claim 4 above, and further in view of Nakagawa et al US 2002/0172438.

Ouchi in view of Imae disclose all the claimed subject matter as described above.

Re clm 5:

Ouchi in view of Imae does disclose the outer shaft portion being formed of metal (fig 1; Ouchi) and the flange portion being formed of resin (Imae; abs).

Ouchi in view of Imae does not disclose:

- The shaft member includes an outer shaft portion forming an outer peripheral face of the shaft portion
- An inner shaft portion provided on an inner periphery of the outer shaft portion
- the inner shaft portion and the flange portion are integrally formed of a resin

Nakagawa teaches:

- The shaft member includes an outer shaft portion (61, fig 1) forming an outer peripheral face of the shaft portion
- An inner shaft portion (62, fig 1) provided on an inner periphery of the outer shaft portion
- the inner shaft portion (top of 62, fig 1) and the flange portion (portion of 62 that overhangs 61, fig 1) are integrally formed of a resin ([0058])

for the purpose of reducing the weight of the unit ([0011]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Ouchi in view of Imae and provide:

- The shaft member includes an outer shaft portion forming an outer peripheral face of the shaft portion

- An inner shaft portion provided on an inner periphery of the outer shaft portion
- the inner shaft portion and the flange portion are integrally formed of a resin

for the purpose of reducing the weight of the unit.

Re clm 12, Ouchi further discloses:

- A rotor magnet (105, fig 1) attached to the rotational-side member
- A stator coil (102, fig 1) attached to the fixed-side member

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALAN B. WAITS whose telephone number is (571)270-3664. The examiner can normally be reached on Monday through Friday 7:30 am to 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alan B Waits/
Examiner, Art Unit 3656